

### **Amendments to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application:

#### **Listing of Claims:**

1-20. (cancelled)

21. (new) A method comprising the steps of:

providing a disk drive having a write head for writing data to a disk surface and a read head for reading data from said disk surface;

5       sensing a temperature of a disk drive in order to determine an optimal write current for said write head associated with said temperature;

      determining a maximum write current which satisfies a predetermined bit error rate;

      determining whether the maximum write current which satisfies said predetermined bit error rate satisfies a write induced instability test associated with  
10   reading data from said disk surface using said read head;

      if said maximum write current which satisfies said predetermined bit error rate does not satisfy said write induced instability test, then reducing said maximum write current until said write induced instability test is satisfied.

22. (new) The method of claim 21 wherein said write induced instability test includes the steps of:

writing a test sequence to multiple data sectors on said disk surface using the maximum write current which satisfies said predetermined bit error rate;

5 reading servo sector position data using said read head immediately after said step of writing.

23. (new) The method of claim 22 wherein said write induced instability test is not satisfied if an error exists in reading the servo sector position data.

24. (new) The method of claim 21 wherein, if said maximum write current which satisfies said predetermined bit error rate does satisfy said write induced instability test, then

determining whether said maximum write current which satisfies said  
5 predetermined bit error rate also satisfies a pole tip protrusion test;

if said maximum write current which satisfies said predetermined bit error rate does not satisfy said pole tip protrusion test, then reducing said maximum write current until said pole tip protrusion test is satisfied.

25. (new) A method for providing a temperature compensated write signal in a disk drive, comprising:

measuring a temperature of said disk drive, wherein said disk drive is at a first temperature;

5           writing a first sequence of data to a first track of a magnetic storage disk using a first transducer head, wherein a first write current amount and a first write current boost amount are supplied to said first transducer head;

          writing data to second and third tracks adjacent to said first track, wherein said first write current amount and said first write current boost amount are supplied to said  
10       first transducer head;

          reading said data from said first track, wherein a bit error rate for said data is determined;

          in response to a bit error rate that is within a predetermined bit error rate, increasing at least one of said write current amount and said write current boost amount  
15       and repeating said steps of writing;

          in response to a bit error rate that exceeds said predetermined bit error rate, decreasing at least one of said write current amount and said write current boost amount;

          setting at least one of a first nominal write current amount and a first nominal write current boost amount equal to an amount that does not result in a bit error rate that  
20       exceeds said predetermined bit error rate;

          writing a second sequence of data to a track of said magnetic storage disk to determine whether the first nominal write current and the first nominal write current boost will subject said first transducer head to write induced instabilities;

          in response to detecting at least one of an error reading servo sector position  
25       information and a position error signal indicating a change in position of said first transducer head of at least a first magnitude, decreasing at least one of said first nominal write current amount and said first nominal write current boost amount.

26. (new) The method of claim 25, further comprising:

measuring a temperature of said disk drive, wherein said disk drive is at a second temperature;

5 altering at least one of said first nominal write current amount and said first nominal write current boost amount to obtain at least one of a temperature compensated write current amount and write current boost amount;

providing said at least one of said temperature compensated write current amount and said temperature compensated write current boost amount to said transducer head.

27. (new) The method of claim 26, wherein said step of altering comprises:

applying said second temperature to an algorithm to obtain a correction amount;  
and

5 applying said correction amount to at least one of said first nominal write current amount and said first nominal write current boost amount.